Exhibit B

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF SOUTH CAROLINA
ROCK HILL DIVISION

Epson America, Inc.,	)	Civil Action No.
	)	
Plaintiff,	)	
	)	
vs.	)	
	)	
USA111, Inc. d/b/a iRULU,	)	
	)	
Defendant.	)	

AFFIDAVIT OF KARL LANG

I, the undersigned, Karl Lang, declare the following:

1. I am currently the principal of Lumita, an independent consulting firm and laboratory located in Madison, Wisconsin, which I founded in 1998, specializing in the field of color science and color metrology. Lumita provides services in three broad categories:

a) *Display, Projector, and Reflective Color Metrology.* Lumita facilities include both an N8 grey room for print work and a dedicated black laboratory, outfitted for display and projector metrology. Lumita carefully follows international standard procedures for display and projector metrology, including, but not limited to IEC, ISO, JBMIA, VESA, ANSI, and the ICDM. Lumita also follows additional guidelines and best practices outlined by the US National Institutes of Standards and Technology ("NIST"). All measurement instruments are calibrated to NIST traceable references.

b) *Research and Consulting.* Lumita provides consulting services for companies that produce color-related products and services. Production methods, competitive analysis, system design, color management work-flow, quality control systems, calibration, color perception, color difference, photometry and color metrology are all areas within my expertise and experience.

c) *Engineering and Product Development.* Lumita conducts partial and complete turnkey product development for products that involve color technology. Software, hardware, user interface, and industrial design can be provided directly. I also have experience developing color measurement and display hardware, as well as integrated software for

color management and calibration. Products I developed have won numerous awards and industry accolades.

2. Prior to founding Lumita in 1998, I was Vice President of Color Technology at Radius, Inc. Sunnyvale, CA. Before joining Radius in 1994, I was Vice President and Co-Founder of Kestrel, Inc. Madison, WI, an early integrator of electronic publishing systems for Fortune 500 companies.

3. I am a member of: The Society for Information Display ("SID"); The Society for Imaging Science and Technology ("IS&T"); the Association for Computing Machinery ("ACM"); and the ACM Special Interest Group for Graphics (ACM SIGGRAPH). From 1994 to 1998 I was a founding and voting representative of the International Color Consortium ("ICC") and was a member of the working group that defined the reference implementation of the ICC workflow and the guidelines for ICC integration with perceptual models. I am currently the chairman of both the Front Projection working group and the Volume and Color Accuracy working group of the International Committee on Display Metrology.

4. Based on my professional experience, I have particular expertise in the area of color science and projector color and light metrology. Specifically, I have personally performed Light Output metrology on over 300 projectors in the last 7 years. As such, I am qualified to give my opinions regarding the lumens specification and testing of a projector's brightness ("Light Output").

5. Plaintiff's counsel has engaged me to render expert testimony in the above referenced action. I am being compensated for my time at a rate of $200 per hour.

6. On July 15, 2016, I was professionally engaged by Epson to test the Light Output of the iRULU BL20 projectors.

7. On August 2 & 3, 2016, I conducted tests on three separate iRULU BL20 model projectors. These three model projectors were purchased in two separate orders from Amazon.com, an official seller of iRULU products.

8. The purpose of these tests was to ascertain the true Light Output of iRULU projectors.

9. The general procedure for the tests was as follows. The projectors were each set up in a lab measuring 10' x 10' x 12', in which the walls, ceiling, and floor were painted with a special matte black to minimize surface reflection. A precision measurement jig was used to precisely align and position the illuminance heads at the focal plane of the projector. Each projector was tested in all available "Modes" for ISO 21118 Light Output; only the brightest mode for each projector was used for reporting. In all cases this was the mode called "Dynamic." Each of the nine measurement locations for each test pattern was sampled 6 times over 40 seconds to account for any minor fluctuations. The complete suite of tests was run twice for every mode on every projector. The trial with the highest Light Output was used for the final data analysis of each projector. The Light Output was collected and analyzed by custom

software that records all aspects of the experiments and provides a detailed log file. The U.S. National Institute of Standards and Technology in NISTIR 6657 (January 2009) provides detailed guidance on the design, implementation and error reporting for front projection ISO 21118 Light Output testing. The same guidelines are part of the ICDM-IDMS 1.03a (International Committee on Display Metrology - International Display Measurement Standard). Both documents were carefully followed in the design and implementation of the experiment and the apparatus used.

10. The results showed that each projector had a maximum Light Output of between 72.6 and 75.6 lumens for white light using the current worldwide projector measurement standard ISO 21118, or the now deprecated but often quoted ANSI standard.

11. IDMS 15.4 Color Light Output was also tested and did not significantly deviate from the white light output measure.

12. The measurement of Light Output is complex, as there are a number of factors that must be carefully controlled and accounted for. Based on the guidelines detailed in the National Institute of Standards and Technology, NISTIR 6657, I calculated the maximum uncertainty of the final measurement result.

13. While the actual result of the experiment is likely to be much more accurate, the total uncertainty accounting for all factors in the experiment is 8%.

14. Adding the 8% uncertainty to the measured Light Output value provides an absolute maximum light output for the projector. For the three projectors tested, I concluded that none of the projectors has a Light Output that could in any way exceed 82 lumens.

15. I also conducted a complete “tear down” of an iRULU BL20 projector, in which I disassembled the projector completely to better understand its design.

16. The design of the iRULU BL20 projector is unique as compared to all other projectors with which I am familiar. The design of iRULU BL20 projector is extremely inefficient. The 5” RGB LCD panel itself has a maximum light transmission of less than 30%. This, combined with a fundamental property of the optical system called etendue, results in very little of the light from the LED lamp ever reaching the projector screen.

17. Due to its unique design, the combination of projector components utilized by iRULU in its BL20 projector are not capable of achieving Light Outputs remotely close to 2600 lumens.

18. It would not be possible to modify the BL20 projector to make it capable of significantly higher Light Output; iRULU would have to use an entirely different lamp, panel, cooling system, and fundamental optical architecture with far more sophisticated and complex engineering.

19. For this reason, it is my opinion that iRULU is misrepresenting the light output of its BL20 LCD LED projector.

20. As all the iRULU LCD LED projectors listed on Amazon, including those in the 800 to 2800 lumen range, can be identified from the photographs and the description as having a similar optical architecture, none of these units could possibly produce the light output claimed.

21. Therefore, it is my expert opinion that any tests conducted on other iRULU LCD LED projectors, particularly those with lumen ratings between 800 and 2800, would conclusively yield the same or lower results as those measured in the BL20 projectors on August 2 & 3, 2016.

I, Karl Lang, declare, under penalty of perjury under the laws of the United States of America, that the above is true and correct.

Karl Lang

1/18/2017
Date